THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	LYSANDER LIM ET AL.
Filed:	February 13, 2002
For:	RADIO-FREQUENCY APPARATUS AND ASSOCIATED METHODS
Serial No.:	10/075,094
Group Art Unit:	UNKNOWN
Examiner:	UNKNOWN
Atty Docket No.:	SILA:074

Pursuant to 37 C.F.R. 1.8, I certify that this correspondence is being deposited with the U.S. Postal Service in an envelope addressed to: Assistant Commissioner for Patents, Washington, D C. 20231 on the date below:

5-13-02 Marty Bowen

Date Name

Assistant Commissioner For Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Please amend the application as follows.

In the specification:

The rewritten clean versions of all the specification changes are provided below. Attached at the end of this paper is an Appendix providing an indication of the changes relative to the prior version of the specification, as now required by Rule 121.

On page 1, please replace the paragraph from lines 19-24 with:

This patent application is a continuation-in-part of: U.S. Patent Application Serial No. 09/821,342, Attorney Docket No. SILA:072, titled "Partitioned Radio-Frequency Apparatus and Associated Methods," filed on March 29, 2001; and U.S. Patent Application Serial No. 09/708,339, Attorney Docket No. SILA:035C1, titled "Method and Apparatus for Operating a PLL with a Phase Detector/Sample Hold Circuit for

Synthesizing High-Frequency Signals for Wireless Communications," filed on November 8, 2000, which is a continuation of U.S. Patent Application Serial No. 09/087,017, filed on May 29, 1998, now U.S. Patent 6,167,245.

Please replace the paragraph beginning on page 1, line 26 and ending on page 2, line 7 with the following:

Furthermore, this patent application claims priority to: Provisional U.S. Patent Application Serial No. 60/261,506, Attorney Docket No. SILA:072PZ1, filed on January 12, 2001; Provisional U.S. Patent Application Serial No. 60/273,119, Attorney Docket No. SILA:072PZ2, titled "Partitioned RF Apparatus with Digital Interface and Associated Methods," filed on March 2, 2001. This patent application also claims priority to, and incorporates by reference: Provisional U.S. Patent Application Serial No. 60/333,940, Attorney Docket No. SILA:074PZ1, titled "Apparatus and Methods for Generating Radio Frequencies in Communication Circuitry," filed on November 28, 2001; Provisional U.S. Patent Application Serial No. 60/339,819, Attorney Docket No. SILA:074PZ2, titled "Radio-Frequency Communication Apparatus and Associated Methods," filed on December 13, 2001; U.S. Patent Application Serial No. 10/075,122, Attorney Docket No. SILA:078, titled "Digital Architecture for Radio-Frequency Apparatus and Associated Methods"; U.S. Patent Application Serial No. 10/075,099, Attorney Docket No. SILA:097, titled "Notch Filter for DC Offset Reduction in Radio-Frequency Apparatus and Associated Methods"; and U.S. Patent Application Serial No. 10/074,676, Attorney Docket No. SILA:098, titled "DC Offset Reduction in Radio-Frequency Apparatus and Associated Methods."

On page 2, replace the paragraph from lines 9 through 14 with:

Furthermore, this patent application incorporates by reference the following patent documents: U.S. Patent Application Serial No. 10/075,098, Attorney Docket No.

SILA:075, titled "Apparatus and Methods for Generating Radio Frequencies in Communication Circuitry"; and U.S. Patent Application Serial No. 10/074,591, Attorney Docket No. SILA:096, titled "Apparatus for Generating Multiple Radio Frequencies in Communication Circuitry and Associated Methods."

In the Claims:

The rewritten clean versions of all the pending claims are provided below. Attached at the end of this paper is an Appendix providing an indication of the changes relative to the prior version of the claims, as now required by Rule 121(c).

Please cancel claim 2 and add new claims 3-45.

1. A voltage-controlled oscillator circuitry, comprising:

a variable capacitor circuitry, the variable capacitor circuitry configured to adjust the frequency of an output signal of the voltage-controlled oscillator circuitry in response to a plurality of control signals; and

a control circuitry, the control circuitry configured to generate the plurality of control signals in response to an input control signal,

wherein the voltage level of each of the plurality of the control signals differs by an offset voltage from the voltage level of the remaining signals in the plurality of signals.

3. The voltage-controlled oscillator circuitry according to claim 1, wherein the variable capacitor circuitry comprises a plurality of capacitor stages coupled in parallel.

4. The voltage-controlled oscillator circuitry according to claim 3, wherein each of the plurality of capacitor stages comprises a first capacitor coupled to a second capacitor.

5. The voltage-controlled oscillator circuitry according to claim 4, wherein the first and second capacitor in each of the plurality of capacitor stages each comprise a fixed capacitor.

6. The voltage-controlled oscillator circuitry according to claim 5, comprising a plurality of variable impedance devices, wherein each of the plurality of variable impedance devices couples in parallel with the second capacitor in a respective one of the plurality of capacitor stages.

7. The voltage-controlled oscillator circuitry according to claim 6, wherein each of the plurality of control signals controls a respective variable impedance device in the plurality of variable impedance devices.

8. The voltage-controlled oscillator circuitry according to claim 7, wherein the input control signal comprises a voltage signal.

9. The voltage-controlled oscillator circuitry according to claim 7, wherein the input control signal comprises a current signal.

10. A radio-frequency (RF) transmitter circuit, comprising:

a controlled oscillator circuit adapted to provide an output signal with variable frequency in response to a plurality of control signals; and

a signal generator circuit adapted to generate the plurality of control signals having respective levels that are progressively offset from an input control signal,

wherein a radio-frequency output signal of the transmitter circuit is derived from the output signal of the controlled oscillator circuit.

11. The radio-frequency (RF) transmitter circuit according to claim 10, wherein the signal generator circuit comprises a plurality of voltage sources, each of the plurality of voltage sources configured to generate a respective one of the plurality of control signals.

12. The radio-frequency (RF) transmitter circuit according to claim 11, wherein the plurality of voltage sources are coupled in series.

13. The radio-frequency (RF) transmitter circuit according to claim 12, wherein the input control signal comprises a voltage signal.

14. The radio-frequency (RF) transmitter circuit according to claim 10, wherein the signal generator circuit generates the plurality of control signals by supplying a current signal to a first terminal of a plurality of resistors coupled in series.

15. The radio-frequency (RF) transmitter circuit according to claim 14, wherein the input control signal couples to a second terminal of the plurality of resistors.

16. The radio-frequency (RF) transmitter circuit according to claim 15, wherein each of the plurality of resistors generates a respective one of the plurality of control signals.

17. The radio-frequency (RF) transmitter circuit according to claim 10, wherein the signal generator circuit further comprises a plurality of voltage generator circuits, each of the plurality of voltage generator circuits comprising a current source coupled to a first terminal of a resistor.

18. The radio-frequency (RF) transmitter circuit according to claim 17, wherein the input control signal couples to a second terminal of each resistor in each of the plurality of voltage generator circuits.

19. The radio-frequency (RF) transmitter circuit according to claim 18, wherein the first terminal of each resistor in the plurality of resistors supplies a respective signal in the plurality of control signals.

20. The radio-frequency (RF) transmitter circuit according to claim 10, wherein the input control signal comprises a current signal.

21. The radio-frequency (RF) transmitter circuit according to claim 20, wherein the plurality of control signals comprise voltage signals, each of the control signals supplied by a respective one of a plurality of voltage generator circuits.

22. An integrated circuit, comprising:

a controlled oscillator circuit, including:

a continuously variable capacitor, the continuously variable capacitor having a capacitance value that varies in response to a plurality of control signals; and

a signal generator circuit adapted to generate the plurality of control signals based on a reference control signal, the signal generator circuit further adapted to generate the plurality of control signals such that each control signal in the plurality of control signals differs from the reference control signal by a respective one of a plurality of offset values,

wherein the integrated circuit has a radio-frequency output signal derived from an output signal of the controlled oscillator circuit.

23. The integrated circuit according to claim 22, wherein the continuously variable capacitor comprises a plurality of variable capacitors coupled in parallel.

24. The integrated circuit according to claim 23, wherein each of the plurality of variable capacitors comprises a capacitor coupled to a variable impedance device.

25. The integrated circuit according to claim 24, wherein each of the plurality of control signals couples to a respective one of the plurality of variable impedance devices.

26. The integrated circuit according to claim 25, wherein the signal generator circuit comprises at least one current source coupled to at least one resistor.

27. The integrated circuit according to claim 26, wherein the input control signal is a voltage signal.

28. The integrated circuit according to claim 27, wherein the radio-frequency output signal has a frequency that varies in response to the plurality of control signals.

29. The integrated circuit according to claim 28, further comprising a radio-frequency transmitter circuit coupled to the output signal of the controlled oscillator circuitry.

30. The integrated circuit according to claim 29, further comprising a radio-frequency receive circuitry.

31. The integrated circuit according to claim 30, wherein the radio-frequency receive circuitry generates at least one output signal coupled to a first integrated circuit that includes digital signal processing circuitry.

32. The integrated circuit according to claim 31, wherein the controlled oscillator circuit couples to an offset phase-locked loop circuit.

33. The integrated circuit according to claim 32, wherein the radio-frequency receive circuitry comprises a low intermediate-frequency receive circuitry.

34. A method of generating radio-frequency (RF) signals, comprising:
generating a plurality of control signals having respective levels that are progressively offset from an input control signal;
supplying the plurality of control signals to an oscillator circuit; and
varying a frequency of output signal of the oscillator circuit in response to the plurality of control signals.

35. The method according to claim 34, wherein generating a plurality of control signals further comprises using a plurality of voltage sources, wherein each of the plurality of voltage sources generates a respective one of the plurality of control signals.

36. The method according to claim 35, wherein the plurality of voltage sources are coupled in series.

37. The method according to claim 36, wherein generating a plurality of control signals further includes using a voltage signal as the input control signal.

38. The method according to claim 34, wherein generating a plurality of control signals further comprises generating the plurality of control signals by supplying a current signal to a first terminal of a plurality of resistors coupled in series.

39. The method according to claim 38, wherein generating a plurality of control signals further comprises supplying the input control signal to a second terminal of the plurality of resistors.

40. The method according to claim 39, wherein generating a plurality of control signals further comprises using each of the plurality of resistors to provide a respective one of the plurality of control signals.

41. The method according to claim 34, wherein generating a plurality of control signals further comprises using a plurality of voltage generator circuits, each of the plurality of voltage generator circuits comprising a current source coupled to a first terminal of a resistor.

42. The method according to claim 41, wherein generating a plurality of control signals further comprises supplying the input control signal to a second terminal of each resistor in each of the plurality of voltage generator circuits.

43. The method according to claim 42, wherein generating a plurality of control signals further comprises supplying each of the signals in the plurality of control signals from the first terminal of a respective resistor in the plurality of resistors.

44. The method according to claim 34, wherein generating a plurality of control signals further includes using a current signal as the input control signal.

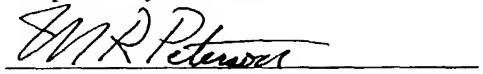
45. The method according to claim 44, wherein generating a plurality of control signals further comprises generating each of the plurality of control signals by using a respective one of the plurality of voltage generator cells.

CONCLUSION

With this amendment, claims 1 and 3-45 are pending. Claim 2 has been cancelled. A check in the amount of $516 is enclosed for the addition of 24 dependent claims and 1 independent claim.

Should any fees under 37 CFR 1.16-1.21 be required for any reason relating to the enclosed materials, the Commissioner is authorized to deduct such fees from Deposit Account No. 10-1205/SILA:074. The examiner is invited to contact the undersigned at the phone number indicated below with any questions or comments, or to otherwise facilitate expeditious and compact prosecution of the application.

Respectfully submitted,



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APPENDIX
MARKED UP VERSION OF AMENDMENTS
AS REQUIRED BY RULE 121

In The Specification:

On page 1, please replace the paragraph from lines 19 through 24 with:

--This patent application is a continuation-in-part of: U.S. Patent Application Serial No. 09/821,342, Attorney Docket No. SILA:072, titled "Partitioned Radio-Frequency Apparatus and Associated Methods," filed on March 29, 2001; and U.S. Patent Application Serial No. 09/708,339, Attorney Docket No. SILA:035C1, titled "Method and Apparatus for Operating a PLL with a Phase Detector/Sample Hold Circuit for Synthesizing High-Frequency Signals for Wireless Communications," filed on November 8, 2000, which is a continuation of U.S. Patent Application Serial No. 09/087,017, filed on May 29, 1998, now U.S. Patent 6,167,245.--

Please replace the paragraph beginning on page 1, line 26 and ending on page 2, line 7 with the following:

--Furthermore, this patent application claims priority to: Provisional U.S. Patent Application Serial No. 60/261,506, Attorney Docket No. SILA:072PZ1, filed on January 12, 2001; Provisional U.S. Patent Application Serial No. 60/273,119, Attorney Docket No. SILA:072PZ2, titled "Partitioned RF Apparatus with Digital Interface and Associated Methods," filed on March 2, 2001. This patent application also claims priority to, and incorporates by reference: Provisional U.S. Patent Application Serial No. 60/333,940, Attorney Docket No. SILA:074PZ1, titled "Apparatus and Methods for Generating Radio Frequencies in Communication Circuitry," filed on November 28, 2001; Provisional U.S.

Patent Application Serial No. 60/339,819, Attorney Docket No. SILA:074PZ2, titled "Radio-Frequency Communication Apparatus and Associated Methods," filed on December 13, 2001; U.S. Patent Application Serial No. [_____] 10/075,122, Attorney Docket No. SILA:078, titled "Digital Architecture for Radio-Frequency Apparatus and Associated Methods"; U.S. Patent Application Serial No. [_____] 10/075,099, Attorney Docket No. SILA:097, titled "Notch Filter for DC Offset Reduction in Radio-Frequency Apparatus and Associated Methods"; and U.S. Patent Application Serial No. [_____] 10/074,676, Attorney Docket No. SILA:098, titled "DC Offset Reduction in Radio-Frequency Apparatus and Associated Methods."--

On page 2, please replace the paragraph from lines 9 through 14 with:

--Furthermore, this patent application incorporates by reference the following patent documents: U.S. Patent Application Serial No. [_____] 10/075,098, Attorney Docket No. SILA:075, titled "Apparatus and Methods for Generating Radio Frequencies in Communication Circuitry"; and U.S. Patent Application Serial No. [_____] 10/074,591, Attorney Docket No. SILA:096, titled "Apparatus for Generating Multiple Radio Frequencies in Communication Circuitry and Associated Methods."--

In The Claims:

[2. A radio-frequency (RF) apparatus, comprising:

a first circuit partition, comprising receiver analog circuitry configured to produce a digital receive signal from an analog radio-frequency signal; and

a second circuit partition, comprising receiver digital circuitry configured to accept the digital receive signal, wherein the first and second circuit

partitions are partitioned so that interference effects between the first circuit partition and the second circuit partition tend to be reduced.]

--3. (New) The voltage-controlled oscillator circuitry according to claim 1, wherein the variable capacitor circuitry comprises a plurality of capacitor stages coupled in parallel.--

--4. (New) The voltage-controlled oscillator circuitry according to claim 3, wherein each of the plurality of capacitor stages comprises a first capacitor coupled to a second capacitor.--

--5. (New) The voltage-controlled oscillator circuitry according to claim 4, wherein the first and second capacitor in each of the plurality of capacitor stages each comprise a fixed capacitor.--

--6. (New) The voltage-controlled oscillator circuitry according to claim 5, comprising a plurality of variable impedance devices, wherein each of the plurality of variable impedance devices couples in parallel with the second capacitor in a respective one of the plurality of capacitor stages.--

--7. (New) The voltage-controlled oscillator circuitry according to claim 6, wherein each of the plurality of control signals controls a respective variable impedance device in the plurality of variable impedance devices.--

--8. (New) The voltage-controlled oscillator circuitry according to claim 7, wherein the input control signal comprises a voltage signal.--

--9. (New) The voltage-controlled oscillator circuitry according to claim 7, wherein the input control signal comprises a current signal.--

--10. (New) A radio-frequency (RF) transmitter circuit, comprising:

a controlled oscillator circuit adapted to provide an output signal with variable frequency in response to a plurality of control signals; and

a signal generator circuit adapted to generate the plurality of control signals having respective levels that are progressively offset from an input control signal,

wherein a radio-frequency output signal of the transmitter circuit is derived from the output signal of the controlled oscillator circuit.--

--11. (New) The radio-frequency (RF) transmitter circuit according to claim 10, wherein the signal generator circuit comprises a plurality of voltage sources, each of the plurality of voltage sources configured to generate a respective one of the plurality of control signals.--

--12. (New) The radio-frequency (RF) transmitter circuit according to claim 11, wherein the plurality of voltage sources are coupled in series.--

--13. (New) The radio-frequency (RF) transmitter circuit according to claim 12, wherein the input control signal comprises a voltage signal--

--14. (New) The radio-frequency (RF) transmitter circuit according to claim 10, wherein the signal generator circuit generates the plurality of control signals by supplying a current signal to a first terminal of a plurality of resistors coupled in series.--

--15. (New) The radio-frequency (RF) transmitter circuit according to claim 14, wherein the input control signal couples to a second terminal of the plurality of resistors.--

--16. (New) The radio-frequency (RF) transmitter circuit according to claim 15, wherein each of the plurality of resistors generates a respective one of the plurality of control signals.--

--17. (New) The radio-frequency (RF) transmitter circuit according to claim 10, wherein the signal generator circuit further comprises a plurality of voltage generator circuits, each of the plurality of voltage generator circuits comprising a current source coupled to a first terminal of a resistor.--

--18. (New) The radio-frequency (RF) transmitter circuit according to claim 17, wherein the input control signal couples to a second terminal of each resistor in each of the plurality of voltage generator circuits.--

--19. (New) The radio-frequency (RF) transmitter circuit according to claim 18, wherein the first terminal of each resistor in the plurality of resistors supplies a respective signal in the plurality of control signals.--

--20. (New) The radio-frequency (RF) transmitter circuit according to claim 10, wherein the input control signal comprises a current signal.--

--21. (New) The radio-frequency (RF) transmitter circuit according to claim 20, wherein the plurality of control signals comprise voltage signals, each of the control signals supplied by a respective one of a plurality of voltage generator circuits.--

--22. (New) An integrated circuit, comprising:

a controlled oscillator circuit, including:

a continuously variable capacitor, the continuously variable capacitor having a capacitance value that varies in response to a plurality of control signals; and

a signal generator circuit adapted to generate the plurality of control signals based on a reference control signal, the signal generator circuit further adapted to generate the plurality of control signals such that each control signal in the plurality of control signals differs from the reference control signal by a respective one of a plurality of offset values,

wherein the integrated circuit has a radio-frequency output signal derived from an output signal of the controlled oscillator circuit.--

--23. (New) The integrated circuit according to claim 22, wherein the continuously variable capacitor comprises a plurality of variable capacitors coupled in parallel.--

--24. (New) The integrated circuit according to claim 23, wherein each of the plurality of variable capacitors comprises a capacitor coupled to a variable impedance device.--

--25. (New) The integrated circuit according to claim 24, wherein each of the plurality of control signals couples to a respective one of the plurality of variable impedance devices.--

--26. (New) The integrated circuit according to claim 25, wherein the signal generator circuit comprises at least one current source coupled to at least one resistor.--

--27. (New) The integrated circuit according to claim 26, wherein the input control signal is a voltage signal.--

--28. (New) The integrated circuit according to claim 27, wherein the radio-frequency output signal has a frequency that varies in response to the plurality of control signals.--

--29. (New) The integrated circuit according to claim 28, further comprising a radio-frequency transmitter circuit coupled to the output signal of the controlled oscillator circuitry.--

--30. (New) The integrated circuit according to claim 29, further comprising a radio-frequency receive circuitry.--

--31. (New) The integrated circuit according to claim 30, wherein the radio-frequency receive circuitry generates at least one output signal coupled to a first integrated circuit that includes digital signal processing circuitry.--

--32. (New) The integrated circuit according to claim 31, wherein the controlled oscillator circuit couples to an offset phase-locked loop circuit.--

--33. (New) The integrated circuit according to claim 32, wherein the radio-frequency receive circuitry comprises a low intermediate-frequency receive circuitry.--

--34. (New) A method of generating radio-frequency (RF) signals, comprising:

generating a plurality of control signals having respective levels that are progressively offset from an input control signal;

supplying the plurality of control signals to an oscillator circuit; and

varying a frequency of output signal of the oscillator circuit in response to the plurality of control signals.--

--35. (New) The method according to claim 34, wherein generating a plurality of control signals further comprises using a plurality of voltage sources, wherein each of the plurality of voltage sources generates a respective one of the plurality of control signals.--

--36. (New) The method according to claim 35, wherein the plurality of voltage sources are coupled in series.--

--37. (New) The method according to claim 36, wherein generating a plurality of control signals further includes using a voltage signal as the input control signal.--

--38. (New) The method according to claim 34, wherein generating a plurality of control signals further comprises generating the plurality of control signals by supplying a current signal to a first terminal of a plurality of resistors coupled in series.--

--39. (New) The method according to claim 38, wherein generating a plurality of control signals further comprises supplying the input control signal to a second terminal of the plurality of resistors.--

--40. (New) The method according to claim 39, wherein generating a plurality of control signals further comprises using each of the plurality of resistors to provide a respective one of the plurality of control signals.--

--41. (New) The method according to claim 34, wherein generating a plurality of control signals further comprises using a plurality of voltage generator circuits, each of

the plurality of voltage generator circuits comprising a current source coupled to a first terminal of a resistor.--

--42. (New) The method according to claim 41, wherein generating a plurality of control signals further comprises supplying the input control signal to a second terminal of each resistor in each of the plurality of voltage generator circuits.--

--43. (New) The method according to claim 42, wherein generating a plurality of control signals further comprises supplying each of the signals in the plurality of control signals from the first terminal of a respective resistor in the plurality of resistors.--

--44. (New) The method according to claim 34, wherein generating a plurality of control signals further includes using a current signal as the input control signal.--

--45. (New) The method according to claim 44, wherein generating a plurality of control signals further comprises generating each of the plurality of control signals by using a respective one of the plurality of voltage generator cells.--